Electrical Cord and Relocatable Power Tap Vulnerability

Lawrence Berkeley National Laboratory Lessons Learned

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Concern Statement: Two recent incidents at Berkeley Lab highlight the inherent vulnerabilities of portable electrical cords and relocatable power taps. The construction, design and utilization of these devices create potential shock, fire, and trip hazards.

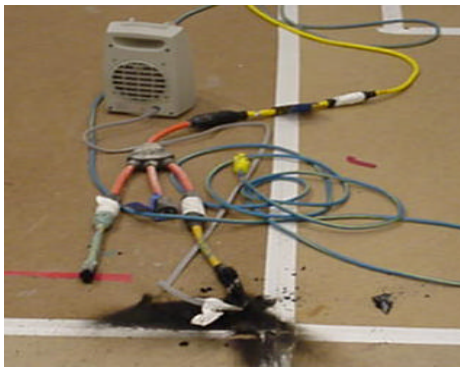
Applicable to: Employees who use portable electrical cords and relocatable power taps.

Incident 1: Failure of a heater plug connection to a portable electrical cord resulted in burned cord ends.

Cause: Due to wear or loose connections, tension inside the female connection of the portable electrical cord was weak, which led to a build up of heat. The plug connection was wrapped in vinyl tape, which concentrated the heat generated and provided a limited fuel source. The heat buildup was sufficient to destroy the tape and burn the plug caps.

Incident 2: A manufactured cord cap melted, destroying the assembly.

Cause: The conductor connections were not adequately tightened. Heat build up melted the cord cap ends and caused the breaker to trip.



Incident 1 – Heater Plug Connection

Incident 2 – Cord Cap Melt Down

Recommended Actions

The following recommendations are provided to reduce the chances of electrical cord failures in other laboratory operations:

- Limit the use of portable electrical cords and relocatable power taps wherever feasible.
- Inspect all electrical cords periodically and prior to use. Pins should fit firmly into connections. Remove from service cords that show **any** visible sign of damage or discoloration due to overheating.
- When necessary, use manufactured devices (*see photo at right)* specifically designed to keep cords connected. Do not tape electrical cord connections.
- Keep combustible materials as far from electrical connections as possible.

Further Information

Any additional assistance or questions regarding this Lessons Learned may be directed to Tom Caronna (x4314) or your Division Safety Coordinator.

For other lessons learned, go to: http://www.lbl.gov/ehs/html/lessons_learned.htm

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